DEPARTMENT OF APPLIED ECONOMICS

RESEARCH REPORT

THE DETERMINANTS OF LEVERAGE; DIFFERENCES BETWEEN QUOTED AND NON QUOTED FIRMS

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The determinants of leverage; differences between quoted and non quoted firms

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ABSTRACT

The design of capital structure in quoted companies has received much attention in the academic literature. Using panel data from quoted as well as non quoted Belgian companies, this paper investigates not only the determinants of capital structure, but also the influence of a stock listing on the relationship between these determinants and leverage. Overall our empirical results are in line with previous studies and support mainly the Pecking Order theory. Also in line with the predictions of the Pecking Order theory, quoted companies are less levered, even when controlling for other determinants of capital structure. Furthermore we find that the determinants of capital structure differ to some extend between quoted and non quoted companies.

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INTRODUCTION

One of the most important decisions confronting a firm in corporate finance, is the design of its capital structure. Since the work of Modigliani and Miller (1958) many studies have been devoted to the question of how much leverage (i.e. the relative amount of debt in the capital structure) a firm should take on, and why. In this paper we investigate the determinants of leverage on a sample of Belgian panel data and - novel to the literature - test whether these determinants differ between companies that are quoted on the stock exchange and those that are not.

Our empirical evidence on the determinants of capital structure is in line with previous studies. Furthermore we find that quoted companies have less debt in their capital structure all else being equal. This result stresses the importance of information asymmetries and the availability of financing alternatives open to quoted firms. The main explanations are on the one hand the lower information costs due to higher levels of transparency in quoted companies and on the other hand the extra information financial markets typically generate about public firms. Next to that, quoted companies also have more financing alternatives and thus higher bargaining power towards their suppliers of finance.

The remainder of this paper is organized as follows. Section II contains a review of the literature on the determinants of capital structure, and whether or not, one would expect a difference between quoted and non quoted firms. Next, section III describes the data and the definition of the variables. Section IV discusses the results, and finally Section V offers some conclusions.

II. LITERATURE REVIEW

Several important theories about capital structure choice have been developed. After a quick summary of the main ideas, we discuss the implication of these theories for firms, and this depending upon specific firm characteristics. In a next step we evaluate whether or not, and how, these theories help to explain differences in capital structure between quoted and non quoted firms.

Trade-Off theory. The Trade-Off perspective is the oldest theory and is immediately linked to the insights from Miller and Modigliani on capital structure. It

predicts that companies optimize their debt level such that marginal tax advantages of additional borrowing are offset by the increase in the costs of financial distress. Specifically, since interest payments are tax deductible, raising more debt increases the tax benefit. However an increase in debt also increases the probability of default and hence the expected cost of bankruptcy.

Pecking Order Theory. A next strand of literature is the Pecking Order Theory pioneered by Myers and Majluf (1984). This literature focuses on information costs and signaling effects. Specifically, in their seminal paper from 1984, Myers and Majluf show that companies prefer to finance their projects from internally generated cash flows. When this source of financing is exhausted, they move on to debt, and only when also the latter source does not suffice to fill financing needs, additional equity is issued. This hierarchy materializes because of differences in financing costs. Issuing additional equity is the most expensive means of financing as it suffers the most from information asymmetries between managers, existing shareholders and potentially new shareholders; in view of its fixed payments, debt is already less sensitive to information problems, while internally generated resources do not suffer at all from issuing costs. According to the Pecking Order Theory external financing would only be used when there is an imbalance between internal funds and real investment opportunities.

Signaling theory. The signaling effect, proposed by Ross (1977), is another capital structure theory based on asymmetric information. According to Ross investors interpret higher levels of debt as a signal of higher quality and higher future cash flows. Lower quality firms cannot mimic higher quality firms by taking on more debt because they have higher expected costs of bankruptcy at any level of debt.

Agency theory. Asymmetric information does not only cause issuance and signaling costs, it also is at the root of agency problems. In fact, in the framework of agency theory, there is a strand of literature studying the impact of debt on sub optimal managerial decision making. One major perspective here is the free cash flow approach put forward by Jensen (1986). In cash flow rich companies, managers may be tempted to spend abundant resources not too wisely and engage in negative net present value projects. In order to mitigate this potential conflict of interest between

the management and the owners, leverage can be increased. For the mandatory payments of interest and principal reduces the cash flow available for spending at the discretion of managers. However, instead of solving the over investment problem, leverage can also lead to the opposite problem. When the proceeds would mainly benefit the debt holders, firms may be tempted to under invest (see Myers 1977). The under investment problem will be more severe for companies whose value consists principally of future growth options, so that these companies are better off using equity. Due to the investment opportunities, these companies have more chances of being short of cash. Under such circumstances the pressure of the debt servicing is likely to hamper firms in the implementation of their investment programs.

Studies on capital structure usually focus on publicly quoted firms, so that research that systematically investigates differences in leverage between public and non public companies is absent. Nevertheless, the latter issue is meaningful as both categories of companies are likely to differ with respect to corporate strategy, investment opportunities, financial constraints and information conditions in general. Below, using the insights from the theories reviewed above, a first subsection discusses the link between firm characteristics and leverage as proposed so far in the literature; the second subsection considers the likely impact of a stock market quotation.

A. Firm characteristics

Previous theories imply that, depending upon firm characteristics, the optimal capital structure differs across firms. Below we discuss them one by one. Table 1 contains for every capital structure theory reviewed above, the hypothesized sign of the relationship between leverage and a particular firm characteristic.

Size. A first important firm characteristic studied in the literature is size. Several papers predict a positive relationship between size and leverage (e.g. Rajan and Zingales (1995), among others). The explanation offered is that information asymmetries are smaller for large companies so that the latter have easier access to the market of debt finance. Hence, at least when compared to internally generated funds, issuance costs of debt financing decrease, so that this mode of financing becomes

more attractive. Therefore one could argue that the Pecking Order theory would predict a positive relationship between size and leverage. However Titman and Wessels (1988) note that both the cost of issuing debt and equity securities is related to firm size. As issuing equity is relatively much more costly for small firms as compared to the costs for large ones, small firms may be more leveraged than large companies. Furthermore to reduce issuance costs even more, small firms may prefer to borrow short term (through bank loans) rather than issue long term debt. Hence, if there are major differences in the way size impacts on the issuance costs of alternative sources of financing, a negative relationship between size and leverage may also materialize within the Pecking Order logic. From the perspective of the Trade-Off theory one would expect that, as large companies tend to be more diversified and less prone to bankruptcy, the latter firms would opt for more debt in their capital structure. As more information is available for large firms, there is also less need for quality signaling through high debt levels by those firms. Furthermore, in view of the availability of more information, the agency perspective would also predict less need for debt as a disciplining device. Hence signaling and agency perspectives would predict a negative relationship between size and leverage. Overall, preceding discussion shows that finance theory is not unambiguous about its prediction of the impact of firm size on leverage. Empirical results suffer from the same problem. Rajan and Zingales (1995) find a positive relationship for the US, UK, Japan and Canada. For France they report no effect while the impact for Germany is negative. Other authors like Titman and Wessels (1988) find no relationship for the US. For Belgium, Deloof and Verschueren (1998) report a positive relationship between size and leverage, but when looking separately at short term debt, this study does not find a relationship with size.

Profitability. Another important firm characteristic that may influence capital structure is profitability. As indicated above, the Pecking Order Theory of Myers and Majluf (1984) predicts that firms prefer financing through retained earnings, then move to debt and as a last resort issue new equity. Consequently, firms with high past profitability and hence opportunities to retain earnings, should have lower debt. By contrast, the Trade-Off theory would predict a positive effect since profitable firms are less likely to go bankrupt, and hence can sustain more debt, thereby capturing more tax advantages. Also agency based theories like the free cash flow theory of

Jensen (1986) predict a positive relationship between profitability and leverage: in profitable firms with excess cash flow, a higher debt level is needed to refrain managers from engaging in sub optimal investment projects. Finally as high profitability may serve as an alternative signal of quality, there is less need for profitable firms to take on high leverage to distinguish themselves from lower quality companies. Hence the signaling perspective would predict a negative relationship between leverage and profitability. Most empirical studies find a negative relationship between profitability and leverage in line with the Pecking Order and signaling theories (e.g. Rajan and Zingales (1995), Titman and Wessels (1988) among others).

Risk. The variability of profits - a proxy for company risk - is hypothesized to be negatively related to leverage. Specifically, the Trade-Off theory implies that the expected cost of financial distress increases with risk, while the chances that the tax shield will be (fully) used decrease. Simultaneously, risk also exacerbates the negative impact of asymmetric information and debtors are likely to protect themselves by strengthening conditions in debt contracts. Consequently as direct and indirect costs of debt increase, the Pecking Order Hypothesis also implies a negative relationship between risk and leverage. By contrast, the agency and signaling perspectives would both predict more leverage as risk increases. For, as argued above, risk exacerbates the negative impact of asymmetric information, increasing the need for quality signaling and disciplining. Similar to theoretical predictions, empirical findings concerning this firm characteristic are not unambiguous either. Titman and Wessels (1988) report a negative but non significant relationship, while Bennet and Donnelly (1993) find a positive impact. Deloof and Verschueren (1998) obtain a significantly negative relationship for Belgian data.

Growth. The literature is also unclear about the relationship between firm growth and leverage. According to the Trade-Off theory, growth companies borrow less because of increased expected costs of bankruptcy. Specifically, growth opportunities are intangible; they increase the value of the firm but they cannot be collateralized. Also from the agency perspective growth companies should have lower leverage. For, as already argued before, growth companies have continuously large cash flow needs and are therefore hampered in their normal investment decisions by the pressure of the additional cash outflows for debt servicing. Because internal financing is not

likely to fill the needs of these firms, the Pecking Order Theory would predict that growth companies are likely to hold more debt. Finally, as growth may serve as an alternative quality signal, the signaling perspective would hypothesize less need for leverage. Again, also empirical findings show conflicting results. Rajan and Zingales (1995) report a negative relationship between growth and leverage, while Titman and Wessels (1988) do not find any connection. Deloof and Verschueren (1998) report a positive relationship for Belgian data.

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Type of asset and non-debt tax shields. The last two important determinants of leverage studied in the literature are type of assets and non-debt tax shields. Turning to type of assets first, there is a strand of literature investigating the collateral value of assets. Myers and Majluf (1984) suggest that managers may reduce the cost of debt by issuing secured debt. Therefore they expect firms with assets that can be collateralized to use more leverage. Similarly, the Trade-Off theory also predicts such a positive relationship as firms with a relatively large portion of tangible assets also have a higher liquidation value, which in turn reduces bankruptcy costs. Neither the Signaling nor the Agency perspective are very helpful in formulating relevant hypothesis concerning the link between tangibility and leverage, except perhaps that agency problems might reduce with the increase of tangible assets because there may be less room for abuse by management. Rajan and Zingales (1995) find a positive relationship between tangibility and leverage for all the G-7 countries in their sample. Deloof and Vershueren (1998) find a negative relationship between intangibility, which can be seen as an inverse measure of tangibility, and leverage. Demirgüç-Kunt and Maksimovic (1996) study the relative importance of short term versus long term assets. They argue that there should be a positive relationship between short term assets and leverage, simply because usually firms finance short term assets with debt while fixed assets are mainly financed by internally generated resources. Overall, capital structure theories have not much to say about the link between the proportion of short term assets and leverage. At the most one could argue that, as short term assets may be more difficult to collateralize on average, the arguments offered above

for tangibility may also be valid to some extend. Finally, the non debt tax shield is a characteristic that fits in with the Trade-Off theory of capital structure. Titman and Wessels (1988) indicate that tax deductions for depreciation and investment tax credits are substitutes for the tax benefits of debt financing. Therefore it can be assumed that firms with large non debt tax shields include less debt in their capital structure. By contrast one may also argue that firms with substantial non debt tax shields should have considerable tangible assets. Consequently there is more room for cheap borrowing, which may induce firms to use more leverage. Empirical evidence is also mixed. De Miguel and Pindado (2001) report a negative relationship for Spanish data. Conversely, Titman and Wessels (1988) do not find a link between non debt tax shields and leverage while Gardner and Trzcinka (1992) show a positive impact.

B. Leverage and stock listing

The literature points out several advantages a firm can extract from having its shares quoted on a stock exchange. Stock markets allow efficient risk sharing and provide informative stock prices. The information contained in stock prices helps to improve allocation of investment and creates opportunities for setting up effective managerial compensation schemes. Simultaneously the stock market may also provide a disciplining device by creating the danger of hostile takeovers and by exposing managerial decisions (Allan 1993) to the market's assessment. A stock market quotation also has disadvantages though. For next to costs directly related to maintaining a quotation, the dissipation of ownership may create costly agency problems between owners and managers, as well as information asymmetries between these two parties. When put into the framework of capital structure theory, preceding arguments may have a bearing on the use of leverage, as they clearly impact on the relative costs of sources of financing.

Only very little empirical research has been devoted to differences and similarities between quoted and non-quoted companies. One likely reason is that in stock market oriented systems like the US and the UK, traditionally one focuses on quoted companies. Another reason is simply one of data availability. Accounting data (in the Anglo-Saxon system) is usually much easier to gather for quoted than for non quoted companies. Mayer and Alexander (1991) attempted to investigate the impact of stock

markets on corporate performance. They use a paired sample of quoted and non-quoted companies drawn from the top 1000 UK firms. Their main findings are that unquoted firms are on average smaller, have higher concentration of ownership, are less diversified across industries and are concentrated in low technology industries. Quoted companies seem to grow faster and be more profitable than non quoted companies. Another important result from Mayer and Alexander is that in their sample quoted firms prove to be more active bidders in the takeover market. From this they conclude that the higher growth of quoted companies is to a large extend attributable to takeover and external growth rather than internal expansion.

As indicated above, the theories concerning capital structure can also be used to develop hypotheses about how a stock listing could influence leverage. Specifically, similar to size, from the perspective of the Trade-Off theory one could argue that the increased transparency reduces expected bankruptcy costs, so that public companies would be better off using more debt than private firms. From the view of agency theory, logic suggests less leverage for unquoted firms. Specifically, the higher ownership concentration that one may expect in non quoted firms, implies less need for the pressure of debt servicing as a disciplining device. Also, since for these companies less financing is available or more costly to obtain, one would expect, similar to the findings of Mayer and Alexander (1991) that these latter firms choose lower growth paths or less cash flow consuming strategies in general. Hence the argument by Myers (1977) about the danger for under investment associated with high debt levels would be less of an issue for the non quoted firms. Finally, the signaling perspective would suggest that, as non quoted firms do not have the need to signal their quality to the external stock market by mastering a high debt level, non quoted firms would be better off to carry less debt than their quoted counterparts. From the Pecking Order theory we can also develop some propositions concerning the determinants of leverage. Pagano et al (1998) find that companies experience a reduction in the cost of bank credit after they went public. Furthermore these companies also prove to be able to borrow from more banks. Pagano et al (1998) explain these results by pointing out that by going public, firms gain bargaining power vis-à-vis financial institutions. Specifically, public companies do not depend solely on banks as a source of external funds. Furthermore as more and better quality information is available about them compared to their non quoted counterparts, public firms enjoy improved access to external financial markets in general. Hence, this

argument would suggest that quoted companies may be more highly levered. Simultaneously however, the earlier mentioned logic of Titman and Wessels (1988) indicates that for non-quoted companies the cost of issuing new equity is much larger than for a quoted company, implying that quoted firms would be less levered as compared to their non quoted counterparts. The paper by Pagano et al (1998) contains another interesting viewpoint concerning leverage and stock listing. It is seen that, in contrast to the United States, in Continental Europe companies do not go public to finance subsequent investment and growth, but rather to rebalance their accounts after a period of high investment and growth. Hence these findings suggest that, ceteris paribus, quoted companies have lower leverage compared to non-quoted companies. Jain and Kini (1994) also argue that one of the motivations to go public is the reduction of debt.

II. DATA AND MEASUREMENT ISSUES

A. Sample Description

The sample consists of panel data for the years 1992-2002 and uses the set of all non financial Belgian companies issuing consolidated statements. Information was gathered from the NBB (National Bank of Belgium) and Van Dijck Belfirst. We don't have 11 years of data for all firms because each year some companies enter or leave the sample. This solves the problem of survivorship bias since for each year we take all firms with available consolidated data.

Table 2 reports information on the composition of our sample according to industry. The total sample contains 587 companies from which 119 are quoted. Almost all of these firms (94%) are (have been) quoted on Euronext Brussels.[1] The largest portion of firms in our sample are manufacturing firms (206). Companies in distribution (114) and servicing (136) are two other important industries in our sample. As in Belgium only parent companies may be required to publish consolidated accounts, the data covers only independent entities (independent firms or business groups as a whole).

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Similar to the very interesting work of Deloof and Verschueren (1998) we test the determinants of leverage for Belgian companies. Our work however adds in three ways to this earlier study. First we use consolidated data. The importance of this kind of information in capital structure research is highlighted by Rajan and Zingales (1995). These authors point out that companies with unconsolidated balance sheets report an affiliate's net assets as a long term investment on their balance sheets. Consequently, if the subsidiary uses debt, these parent firms would (incorrectly) appear to have lower leverage than otherwise identical firms that do consolidate. Alternatively, these companies may place the debt they take on in less visible affiliated companies and borrow it back via inter firm trade credit. Rajan and Zingales (1995) find, for their Japanese and German samples, that firms that do not report consolidated balance sheets have indeed much lower leverage than firms that do. Second, we use panel data, so that we can test both cross sectional and time effects. Third, and novel to the literature, we also extend capital structure research to include the impact of a stock market quotation on the use of leverage.

B. Variable measurement issues

We use two proxies for leverage: total debt and short term debt both divided by total assets. Since our sample consists of quoted and non quoted companies we can only use accounting measures for the different types of debt. However prior studies like Titman and Wessels (1988) have shown that empirical models based on book values give similar findings to those based on market values. Next to measuring leverage, we also use debt mix variables. BANKLEV proxies for the importance of bank debt and is defined as total bank debt (long and short term) divided by total debt. Similarly TRADCRED is calculated as the total amount of trade credit divided by total debt and STDEBT as short term debt divided by total debt.

We use two proxies for size: LNTA is the natural logarithm of total assets and LNVA is the natural logarithm of value added. Profitability is measured as the return on assets (ROA) calculated as EBIT divided by total assets. As an alternative proxy

for profitability we also use a cash flow measure. CASHFL is calculated as net income plus the non cash flow costs minus the non cash flow revenues. The cash flow variable is also divided by total assets. Since the two size (profitability) variables are highly correlated, only one of them is included in a model.

As in Deloof and Verschueren (1998), in any one year, risk (RISK) is proxied by the standard deviation of the return on assets for the last three years. This way we lose the first two years of data for our models. Company growth (GROWTH) is measured as growth in sales during that year and can proxy for growth opportunities. Since our sample consists of quoted as well as non quoted companies, other growth opportunity measures like Tobin's Q or market to book are not available for this study. The non-debt tax shield (NDTAX) is calculated as depreciation divided by total assets.

The last group of variables proxies for the type of assets. As in Titman and Wessels (1988), for investigating the issue of collateral value / tangibility, we use the ratio of intangible assets to total assets (INTAS) and the ratio of inventory plus gross plant and equipment to total assets (TANGAS). The first indicator is negatively related to collateral value, while the second one (representing tangible assets) is positively correlated to it. Following Demirgüç-Kunt and Maksimovic (1996) and as discussed above, we also define the ratio of current assets to total assets (CURAS) to investigate the relationship between current assets and leverage.

Finally, our QUOTED dummy distinguishes between listed and non listed companies (i.e. 1 if the firm is listed on the stock exchange in that year). We also use industry dummies based on 2 digit NACE codes and year dummies to account for industry and year effects.

III. EMPIRICAL RESULTS

A. Univariate statistics

Below we split our sample in a non quoted and quoted group and calculate the means and medians for the variables defined in the previous section. The results are shown in Table 3.

Panel A includes all variables concerning leverage and debt mix. Non–quoted companies use more leverage than the quoted ones. Non-quoted companies hold on average about 65% of there total assets in debt whereas for quoted companies this is

only about 56%. This result is in line with the logic of Titman and Wessels (1988) about the relative decrease in the cost of attracting equity and with the findings of Pagano et al (1998) at the time a company goes public through an initial public offering of its shares (IPO). The overall average is also in line with the results in Deloof and Verschueren (1998).[2] Also the proportion of short term debt to total assets amounts to almost 50% for non-quoted firms and is significantly higher than for quoted ones. Next we calculate the proportion of short term debt in total debt to evaluate whether or not, given a higher debt level, non-quoted companies still rely relatively more on short term. Panel A shows that in non-quoted companies short term debt accounts for almost 74 % of all leverage, which is significantly more than the 70% in quoted ones. Thereby the use of trade credit is more popular with private firms as compared to quoted ones. Finally Panel A shows no significant difference in the relative use of bank debt between the two sub samples.

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Panel B of Table 3 contains means and medians for the variables indicating size and performance. Not surprisingly, the variable total assets as well as the value added variable show that quoted companies are significantly larger than non-quoted ones. Specifically, if we would transform this numbers back to real euro values we would find that quoted companies are on average about twice as large. Hence some of the differences in leverage reported in Panel A above could simply be due to this size difference. Menédez Reguejo (2002) for example, found that small companies were more levered than large companies and Titman and Wessels (1988) indicated, as already noted, that small companies would have higher proportions of short term debt. Later on we will control for size in our regression models to test whether or not the differences remain.

Other variables in panel B are return on assets, the cash flow variable and sales growth. Return on assets only differs between quoted and non-quoted companies in median terms. Also the cash flow variable differs only marginally. This implies that the quoted companies do not outperform the non-quoted ones based on these accounting performance measures. The growth of quoted firms however is

significantly higher. On average the growth in sales is twice as large for the latter, but in median terms the difference is less pronounced though still significant on a 1% level.

The last variables of interest are shown in panel C of Table 3. The variability of profitability captured by our risk variable does not seem to be significantly different for the two groups. On average non quoted as well as quoted companies have a standard deviation of about 4% to 5%. Public companies have however significantly higher depreciation tax shields. Within the context of the Trade-Off perspective, this is consistent with the lower use of debt by these firms as they have more competing tax shields available.

The other variables in panel C represent the tangibility or the collateral value of assets. Non quoted companies have significantly more current assets relative to total assets. This means that quoted companies have a larger proportion of fixed assets, so that, consistent with the data, one also would expect more depreciation tax shields. The proportion of intangible assets seems to be slightly larger for quoted companies but tangible assets are not different between both groups. The reason for the latter result is probably that our measure of tangible assets also includes inventories. Specifically, although not reported in Table 3, we have also tested for the importance of inventories and found that in non quoted companies the latter is significantly higher.[3] Table 3 indicates that both relative use as well as the composition of the debt structure differs between public and private firms. However several determinants of leverage and debt composition also differ. In the next section we investigate the interactions between all these variables to gain a more thorough understanding of the dynamics of leverage and debt composition.

B. Univariate correlations

Table 4 reports correlations between our variables of interest. Panel A shows the results for the full sample. Note however that these are univariate test results, and hence should be interpreted with care. However the correlations are useful as they yield some insights into the properties of the sample data.

Most of the variables have signs consistent with some theoretical hypothesis.[4] Profitability (ROA), risk, intangible assets, size are significantly negatively correlated with leverage, while there is a positive relationship with current assets and no or only

a marginal relationship with tangible assets and growth. The correlation of non debt tax shield with leverage as well as short term debt, not reported in table 4, is significantly negative. This is also in line with our hypothesis based on trade off theory.

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However to arrive at final conclusions, there is a need to correct simultaneously for different firm characteristics. For example, size seems to be negatively correlated with leverage as well as short term debt. We also saw from the descriptive statistics in Table 3 that quoted companies are much larger than the non quoted firms and that these latter companies hold more debt. Hence, is leverage really negatively related to size or rather does the negative correlation reflect the impact of not being quoted? At least panel A of Table 4 implies that, overall, correlations between variables are such that multicollinearity problems are limited.

Finally in panel B of Table 4 we split up our sample in a quoted and non quoted group. The upper right part of the matrix represents the correlation results for the non quoted sample while the lower left part contains those for the quoted one. This way we can test for differences in relationships between variables across sub samples. For the private firms results are largely similar to those of the full sample. The sample of public companies however reveals that less variables are significantly correlated with leverage. Only the proportion of short term debt relative to total assets, ROA and intangibles show a significant relationship with leverage. Contrary to their private counterparts, and except for intangibles, for public firms there is no correlation between leverage and composition of asset side, growth and risk. Possibly some weak correlation with size may exist. These findings indicate that the determinants of leverage are not entirely different for quoted and non-quoted companies, but that conducting also split regressions between subgroups is warranted.

C. *Multivariate testing of the determinants of capital structure*

For comparability, the basic models we test are similar to those in Deloof and Verschueren (1998) and Rajan ans Zingales (1995). As in Rajan and Zingales (1995) all models are tested using maximum likelihood regression. Compared to OLS, this technique has the advantage that variables need not have constant variance. Hence, biases due to heteroscedasticity are avoided. Each model was tested first without and than with a specific firm effect (i.e. for each firm a dummy was added to absorb company specific information). Table 5 shows the results for the full sample, without correcting for the fact that some firms are quoted while others are not. The left hand side of Table 5 contains models (A) with no firm effects. In the right hand side models (B) firms are allowed to have random intercepts. All models are tested with industry and year effects.[5] Finally, to avoid multicollinearity, and as a robustness check, in turn, each one of two highly correlated variables is left out. What variable is deleted is indicated with a dash.

Models A1 to A4 all have comparable explanatory power. The pseudo R^2 is between 27% and 31%, which is comparable with Deloof and Verschueren (1998). Another consistent result for these four models is that the industry effects are each time very significant, but the year effects are not.

The relationship between profitability (ROA or CASHFL) and leverage is significantly negative. This result is contradicting the Trade-Off theory as well as the signaling explanations of capital structure but is in line with the Pecking Order Theory proposed by Myers and Majluf (1984) as well as the Agency perspective.

The second determinant of interest, risk, has a negative relationship with the proportion of total debt, as predicted by both the Trade-Off theory and the Pecking Order logic. It contradicts however both the Agency and Signalling perspectives.

In none of the four models the coefficients of the size variables (LNTA or LNVA) are significant and may not even be of the predicted sign. This is in contrast to the results in Deloof and Verschueren (1998). However Rajan and Zingales (1995) do not find a significant relationship between size and leverage either on their French and Italian samples.

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The growth variable has a positive coefficient that is very significant in the four models. The positive relationship between growth and leverage is again in line with the Pecking Order perspective and contradicts the other views. For, consistent with Pecking Order theory, fast growing companies use up much cash flow and are therefore forced to turn to debt once the internally generated resources have been exhausted.

Another variable that is used in all four models is the proportion of current assets. The sign of the CURAS coefficient is positive and significant at the 1% level for most models. This result is in line with the arguments of Demirgüç-Kunt and Maksimovic (1996) that current assets are mainly financed with debt. It is also consistent with both the Trade-Off and Pecking Order perspectives.

The last determinant of leverage tested in our models is the collateral value of assets. Following Titman and Wessels (1988) we use two alternative measures (i.e. TANGAS and INTAS). The estimate for these variables is in line with the Trade-Off and Pecking Order theories (positive for TANGAS since more tangible assets are available to serve as collateral and negative for the measure of the importance of intangibles INTAS).

The right hand side of Table 5 shows the results of the same models but tested with firm specific intercepts. Because of the inclusion of this firm specific intercept, the fit statistic, pseudo R^2, is much higher and reaches almost 0,88. In contrast to the left hand side models, the year effects become much more important while the industry effects remain highly significant. This result is not entirely unexpected. By imposing a fixed firm effect for each company, much of the cross-sectional variation of leverage is eliminated. This way inter temporal variation gains in importance, leading to the significant year effects.

A comparison of the models without fixed firm effects (A) and the models with fixed firm effects (B) shows one important difference. The size variables LNTA and LNVA are significantly positively related with leverage in the fixed effect models. Hence, all else being equal, larger companies hold relatively more debt in their capital

structure as was predicted by all the capital structure theories. The size effect however was not significant in the models with no fixed firm effects. From this we can conclude that the size effect is more inter temporally than cross sectionally evident. This finding again is consistent with the Pecking Order perspective, as contrary to the other theories, the dynamics of leverage is a fundamental part of its logic. The different results for the fixed effect models indicate that each firm has its own starting level of leverage; then this level is adjusted depending upon the firm specific values of the different determinants. This is consistent with the notion that path dependency is important (as implied by the Pecking Order theory) or that the firm specific dummies capture the impact of missing variables. Importance of path dependency and history – this would be captured by the firm specific intercepts - could also explain why in the fixed effects models growth loses much of its significance. For, according to the Pecking Order theory, past growth would lead to higher starting levels of leverage, differences which are captured by the firm dummies. Growth would then continue to capture mainly cross sectional yearly short term effects. This interpretation also implies that growth is more related to the level of the firm dummies as compared to size, so that, once these dummies are included, less variation in the data is left to be captured by our growth variable.

Other determinants like profitability (ROA, CASHFL), current assets (CURAS), collateral value of assets (TANGAS, INTAS) hold the same sign and significance as in the former models. However the risk variable (RISK) suffers from a decrease in significance. This could suggest that this variable contains much noise, so that a simple firm specific adjustment like a dummy is capable of partially attracting its explanatory power. It is also consistent with the notion that long term effects are, at least to some extend, captured by the dummy, while yearly short term effects are reflected in RISK.

In sum we can conclude from table 5 that the results are in line with other empirical research concerning capital structure. Overall the findings lend most support to Pecking Order theory.

D. The impact of stock listing

The univariate test results of table 3 showed that quoted companies are relatively less debt financed as compared to private firms. In the following models, we test whether this effect remains when we control for other determinants of capital structure. Therefore we include a QUOTED dummy in previous regression models. However, because of the similarity in results for the models A1, A2, A3 and A4 in Table 5, we only continue with model A1. The first column of Table 6 contains the model without fixed firm effects, while in column 2 fixed firm effects are used.

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INSERT TABLE 6 ABOUT HERE

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Column 1 of Table 6 shows that the QUOTED dummy adds explanatory power to the model. The coefficient has a value of –0.0407 and is significant at a 1% level. Hence, controlling for other determinants of capital structure, quoted firms have lower leverage as compared to non quoted ones. This finding is consistent with the Pecking Order view and with the findings of Pagano et al (1998) on European stock market introductions. All other results remain similar to those obtained before. However, the differences in correlation structure as reflected in Table 4 indicates that relationships between the variables within the sub samples of quoted and unquoted firms may be different. Furthermore the Pecking Order theory stresses the fact that, when information conditions change (as is the case when a firm becomes quoted), relative costs of alternative sources of finance change also. This implies an alteration in the parameters of the implicit decision models firms are faced with. Therefore, in order to test whether the determinants of capital structure are different for quoted and non-quoted companies, we split up our sample in two groups and retest the models. The results are shown in Table 7 where the left hand side represents the non quoted sample and the right hand side the quoted one.

Several differences appear between the private and public companies. The variable measuring risk has a negative relationship with leverage but the coefficient is no longer significant for the quoted sample. The size variable has a positive coefficient for quoted companies in the fixed firm effect models as well as the no

fixed firm effect models. This indicates that size is a relatively more important determinant of capital structure for quoted companies.

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INSERT TABLE 7 ABOUT HERE

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An important difference between quoted and non quoted companies is the impact of growth on the proportion of debt. For public companies high growth does not necessarily result in more debt. The coefficient of growth has a positive sign but is not significant in the quoted sample. An explanation for this could be that quoted companies have more alternative forms of financing, so that their financial structure is less dependent upon using (bank)debt once internally generated funds are exhausted. Rajan and Zingales (1995), who only considered public firms in their sample, already found a negative relationship or no significant relationship between growth and leverage. Similarly, current assets is also less important as a determinant of leverage for quoted companies, especially in the model with fixed firm effects. Again the argument that quoted companies have more financial flexibility could be used here. Another important difference between quoted and non quoted companies seems to be the collateral value of assets. While the tangibility has a strong positive relationship with leverage for private companies, this relationship does not seem to exist for public firms. This indicates that quoted enterprises are less dependent upon collateral value to obtain debt. For quoted companies are less likely to go bankrupt and information asymmetries are lower than with non quoted companies. Therefore collaterability will be less of an issue in the negotiation of debt contracts. On top the evidence in authors like Pagano et al. (1998) supports the notion that quoted companies have more bargaining power with financial institutions. Ceteris paribus, this also reduces the need of offering collateral. Overall the evidence in Table 7 is consistent with the Pecking Order perspective and suggests that quoted companies have more financial flexibility, so that, when internal financial resources are exhausted, contrary to their private counterparts, they are less dependent on debt (e.g. to handle year to year variations in financing needs).

E. Explaining short term debt

For completeness, and following Deloof and Verschueren (1998), we use tentatively the models of Tables 6 and 7 to explain the proportion of short term debt in the capital structure. Panel A of Table 8 contains the results for the full sample, while Panel B reports the split sample regressions. Turning first to Panel A, it can be seen that there is no difference in the sign of any significant coefficient between the short term debt and the leverage models. Also the variables that have significant coefficients are largely the same.

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INSERT TABLE 8 ABOUT HERE

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There are, however, a few noteworthy differences for the short term debt models. First of all the impact of current assets on short term debt is about twice as large as the impact on leverage itself. This is a logical result since current assets can change rapidly and therefore need to be financed on a short term basis. A second remark is that tangibility is much less important in the short term debt models, which, perhaps not surprisingly, indicates that collateral value is relatively more important for long term debt. Also here the coefficient of the quoted dummy is negative and significant. Hence, controlling for other firm characteristics, quoted companies use less short term debt. However, overall the fit statistics of the models show that the explanatory power of the regressions explaining short term debt is much lower than of those explaining total debt.

In the split regressions of Panel B, the most remarkable result is that size has a negative or no relationship with short term debt for non quoted firms and a positive relationship for quoted ones. Profitability and current assets have the same impact on short term debt for quoted and non quoted firms, although for quoted firms, once the firm specific dummy is taken into account, no impact is left anymore. Similarly, growth seems to be a more important driver of short term debt for private companies. Comparable to total debt, also short term debt is less influenced by growth in quoted companies. This could indicate that the higher level of financial flexibility available to

public firms causes them to be less dependent upon internally generated cash flows/uses for managing short term debt.

As our modeling of the drivers of short term debt was only tentative, our conclusions on this issue should be interpreted with care. However, overall the empirical results seem to indicate that, just as in the case of total leverage, publicly quoted firms use relatively less (short term) debt. Furthermore, the data suggest that the latter firms are less dependent upon internally generated cash flows/uses for managing short term debt.

IV. DISCUSSION AND CONCLUSIONS

In this paper we analyze the main firm characteristics that, according to the literature, are important determinants of capital structure. We also test empirically the impact of a stock listing on the use of leverage for Belgian firms.

For the determinants of leverage we find evidence in line with earlier empirical studies. Well known firm characteristics like profitability, growth, risk and tangibility have the expected impact on the level of debt. Overall results are mainly consistent with the Pecking Order theory put forward by Myers and Majluf (1984). The other important perspectives studied in the literature, i.e. Trade-Off, Signaling and Agency problems get less support from our data.

Quoted companies seem to be less levered, even when controlling for other determinants of capital structure. As discussed in the paper, this result is in line with the Pecking Order theory. Furthermore, at least to some extend, determinants of capital structure differ between quoted and non-quoted firms. Profitability is an important driver of total leverage for both subgroups. However growth, the extend to which the company owns tangible assets, and the proportion of current assets is more important for the capital structure of private firms. These findings are in line with the Pecking Order theory and support the idea that the latter type of firms are more financially constrained as compared to the public ones.

Unfortunately static capital structure models, like the ones tested in this paper, are not able to systematically capture the dynamic adjustment in leverage ratios. Recent studies like De Miguel and Pindado (2001) propose a dynamic model approach where observed and optimal leverage may differ due to the presence of adjustment costs. It might be interesting, for future research, to test whether the adjustment process differs

between quoted and non quoted companies. This dynamic approach would shed additional light on the impact of stock listing on capital structure. Also a more in depth analysis of the drivers of short term debt would be of interest.

NOTES

1. From the 119 quoted companies in our sample, there are 13 companies that became public during the sample period for which we have data from both their private and public period. On the other hand there are 4 companies that went private for which we also have data from the public as well as the private period.
2. The median leverage for our sample is 65% while Deloof and Verschueren (1998) report 68%.
3. On average the proportion of inventory to total assets is 19% for non quoted companies compared to 16% for the quoted sample.
4. To avoid redundancy we leave out several highly correlated variables from the correlation matrix like LNVA, which has a correlation with LNTA of 0.85, and cash flow which is highly correlated (0.80) with return on assets. Also NDTAX is not included in the correlation matrices. This is because this variable will not be included in the regression models later on.
5. Non debt tax shields were not included in the models presented in this paper mainly because the variable was not used in comparable studies like Deloof and Verschueren (1998) or Rajan and Zingales (1995). We did however test the impact of our NDTAX variable on leverage. The coefficient was negative but was not consistently significant over all models.

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TABLE 1

Hypotheses of the determinants of leverage according to different theories

Determinants	Pecking Order	Trade-Off	Signaling	Agency
Size	+/-	+	-	-
Profitability	-	+	-	+
Risk	-	-	+	+
Growth	+	-	-	-
Tangibility	+	+	n.a.	-
Current Assets	+	+	n.a.	-
Non-debt Tax Shield	n.a.	-	n.a.	n.a.
Stock Listing	+/-	+	+	+

\+ : positive impact
\- : negative impact
n.a. : not applicable

TABLE 2

Sample composition and industry distribution

Industry	Number of firms	Non Quoted	Quoted
Food & Agriculture	55	45	10
Manufacturing	206	162	44
Construction	27	24	3
Distribution	114	94	20
Transportation	49	45	4
Services	136	98	38
Total firms	**587**	**468**	**119**

TABLE 3

Descriptive statistics for quoted and non quoted subsamples

PANEL A					
		Non quoted	quoted	Test	p-values
Leverage	Mean	0,64263	0,56087	64,389***	0,000
	Median	0,66365	0,57374	-10,254***	0,000
Stdebt/ta	Mean	0,4713	0,3857	64,389***	0,000
	Median	0,4643	0,3585	-9,963***	0,000
Stdebt	Mean	0,73958	0,70451	14,254***	0,000
	Median	0,77362	0,72947	-4,095***	0,000
Banklev	Mean	0,29113	0,29365	0,066	0,798
	Median	0,28744	0,26142	-0,108	0,914
Tradcred	Mean	0,31648	0,25483	25,788***	0,000
	Median	0,27996	0,23614	-6,963***	0,000

PANEL B					
		Non quoted	quoted	Test	p-values
Lnva	Mean	10,36799	11,06203	110,057***	0,000
	Median	10,27505	11,06715	-10,910***	0,000
Lnta	Mean	11,52077	12,23690	143,979***	0,000
	Median	11,29220	12,04728	-11,172***	0,000
Growth	Mean	0,04719	0,11707	14,608***	0,000
	Median	0,04665	0,05773	-7,598***	0,000
ROA	Mean	0,05045	0,05009	0,009	0,924
	Median	0,04522	0,05157	-2,366**	0,018
Cashfl	Mean	0,04990	0,05139	0,161	0,688
	Median	0,04711	0,05130	-2,230**	0,026

PANEL C					
		Non quoted	quoted	Test	p-values
Risk	Mean	0,04368	0,04729	0,098	0,755
	Median	0,01387	0,01390	-1,111	0,267
Ndtax	Mean	0,05838	0,07775	14,461***	0,000
	Median	0,03904	0,04635	-5,194***	0,000
Curas	Mean	0,62779	0,55681	59,767***	0,000
	Median	0,64670	0,56064	-7,287***	0,000
Intas	Mean	0,06081	0,06379	0,247	0,619
	Median	0,01003	0,01435	-3,321***	0,001
Tangas	Mean	0,42415	0,43147	0,606	0,436
	Median	0,43700	0,44394	-0,676	0,499

The F-test statistic for the means test and the Wilcoxon Mann-Whitney Z-statistic for the median test are given in the respective row together with the corresponding P-value. Variables are defined as in section II.B; * denotes significance at the 10% level; ** denotes significance at the 5% level; *** denotes significance at the 1% level

TABLE 4

Correlation Matrix of the determinants of leverage

PANEL A: Correlations for the full sample									
	Leverage	Stdebt/ta	roa	Risk	lnta	growth	curas	intas	tangas
Leverage		0,642**	-0,155**	-0,102**	-0,062**	0,048*	0,223**	-0,312**	(0,000)
		(0,000)	*(0,000)*	*(0,000)*	*(0,001)*	*(0,026)*	*(0,000)*	*(0,000)*	*(0,987)*
Stdebt/ta			-0,128**	-0,117**	-0,216**	0,048*	0,578**	-0,307**	-0,179**
			(0,000)	*(0,000)*	*(0,000)*	*(0,026)*	*(0,000)*	*(0,000)*	*(0,000)*
Roa				-0,140**	0,055**	0,027	0,026	-0,069**	0,086**
				(0,000)	*(0,002)*	*(0,187)*	*(0,149)*	*(0,000)*	*(0,000)*
Risk					0,048*	0,025	-0,125**	0,417**	-0,075**
					(0,032)	*(0,281)*	*(0,000)*	*(0,000)*	*(0,002)*
Lnta						0,047*	-0,306**	0,143**	0,123**
						(0,023)	*(0,000)*	*(0,000)*	*(0,000)*
Growth							-0,008	-0,097**	0,019
							(0,707)	*(0,000)*	*(0,379)*
Curas								-0,387**	-0,393**
								(0,000)	*(0,000)*
Intas									-0,319**
									(0,000)
Tangas									

PANEL B: Correlations for non- quoted sample (top right) and quoted sample (bottom left)									
	Leverage	Stdebt/ta	Roa	risk	lnta	growth	curas	intas	tangas
Leverage		0,636**	-0,174**	-0,116**	-0,080**	0,088**	0,254**	-0,333**	-0,002
		(0,000)	*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*	*(0,937)*
Stdebt/ta	0,628**		-0,160**	-0,099**	-0,236**	0,094**	0,596**	-0,306**	-0,167**
	(0,000)		*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*
Roa	-0,123**	-0,063		-0,107**	0,016	0,064**	0,021	-0,074**	0,077**
	(0,002)	*(0,114)*		*(0,000)*	*(0,447)*	*(0,008)*	*(0,302)*	*(0,000)*	*(0,000)*
Risk	-0,052	-0,196**	-0,277**		0,101**	0,024	-0,120**	0,402**	-0,064*
	(0,275)	*(0,000)*	*(0,000)*		*(0,000)*	*(0,384)*	*(0,000)*	*(0,000)*	*(0,020)*
Lnta	0,083*	-0,057	0,137**	-0,108*		0,104**	-0,278**	0,130**	0,099**
	(0,035)	*(0,147)*	*(0,000)*	*(0,014)*		*(0,000)*	*(0,000)*	*(0,000)*	*(0,000)*
Growth	-0,016	-0,031	-0,054	0,043	-0,119**		0,020	-0,088**	0,042
	(0,714)	*(0,487)*	*(0,189)*	*(0,337)*	*(0,004)*		*(0,402)*	*(0,000)*	*(0,094)*
Curas	0,065	0,476**	0,038	-0,162**	-0,307**	-0,034		-0,410**	-0,350**
	(0,103)	*(0,000)*	*(0,310)*	*(0,000)*	*(0,000)*	*(0,406)*		*(0,000)*	*(0,000)*
Intas	-0,246**	-0,318**	-0,061	0,499**	0,189**	-0,123**	-0,331**		-0,336**
	(0,000)	*(0,000)*	*(0,102)*	*(0,000)*	*(0,000)*	*(0,003)*	*(0,000)*		*(0,000)*
tangas	0,014	-0,227**	0,110**	-0,123**	0,180**	-0,047	-0,527**	-0,269**	
	(0,722)	*(0,000)*	*(0,005)*	*(0,008)*	*(0,000)*	*(0,273)*	*(0,000)*	*(0,000)*	

Pearson correlation matrices for leverage variables and determinants. P-values of the two-tailed Pearson's correlation test in parentheses; * denotes significance at the 5% level; ** denotes significance at the 1% level

TABLE 5

Determinants of leverage

	No fixed firm effects				Fixed firm effects			
	A1	A2	A3	A4	B1	B2	B3	B4
Intercept	0.6019***	0.5981***	0.6858***	0.6726***	0.5020***	0.5518***	0.6513***	0.6225***
	(7.59)	*(7.77)*	*(8.93)*	*(8.42)*	*(2.80)*	*(3.12)*	*(3.68)*	*(3.45)*
ROA	-0.5691***	-0.6531***	-0.5915***	-	-0.4939***	-0.5940***	-0.4992***	-
	(-8.74)	*(-9.00)*	*(-9.17)*		*(-9.16)*	*(-9.90)*	*(-9.22)*	
Cashfl	-	-	-	-0.5683***	-		-	-0.5222***
				(-8.62)				*(-9.43)*
Risk	-0.0779***	-0.0672**	-0.0581**	-0.0766***	-0.0384*	-0.0439	-0.0364	-0.0377*
	(-3.94)	*(-2.07)*	*(-2.29)*	*(-3.84)*	*(-1.75)*	*(-1.06)*	*(-1.49)*	*(-1.71)*
Lnta	0.0027	-	0.0032	-0.0004	0.0184***	-	0.0141***	0.0116**
	(0.81)		*(0.97)*	*(-0.13)*	*(3.58)*		*(2.72)*	*(2.17)*
Lnva	-	0.0042	-	-	-	0.0152***	-	-
		(1.22)				*(2.91)*		
Growth	0.0375***	0.0443***	0.0274**	0.0372***	0.0117*	0.0135*	0.0102	0.0058
	(3.39)	*(3.38)*	*(2.49)*	*(2.98)*	*(1.88)*	*(1.76)*	*(1.62)*	*(0.81)*
Curas	0.2358***	0.2271***	0.1450***	0.2205***	0.1162***	0.1173***	0.0196	0.0948***
	(9.51)	*(8.94)*	*(5.91)*	*(8.74)*	*(3.99)*	*(3.95)*	*(0.65)*	*(3.28)*
Tangas	0.0574**	0.04889**	-	0.0850***	0.0785***	0.0662***	-	0.0950***
	(2.51)	*(2.08)*		*(3.67)*	*(3.44)*	*(2.86)*		*(4.14)*
Intas	-	-	-0.2849***	-	-	-	-0.1959***	-
			(-7.32)				*(-5.23)*	
Firm effect	No	No	No	No	Yes	Yes	Yes	Yes
F-stat ind.	7.96***	7.73***	7.89***	7.67***	1.88***	1.73***	1.83***	1.81***
F-stat year	0.43	0.45	0.56	0.55	1.64	2.11**	1.74*	2.24**
Pseudo R^2	0.286	0.272	0.308	0.284	0.875	0.872	0.874	0.877

Maximum likelihood regressions with leverage as dependent variable. T-tatistics in parentheses; Variables are as defined in Section II. B;
* denotes significance at the 10% level; ** denotes significance at the 5% level; *** denotes significance at the 1% level

TABLE 6

Impact of stock listing on leverage

	Leverage	
	No fixed firm effects	Fixed firm effects
Intercept	0.5856***	0.4630***
	(7.40)	*(2.60)*
ROA	-0.5623***	-0.4792***
	(-8.64)	*(-8.92)*
Risk	-0.0806***	-0.0386*
	(-4.08)	*(-1.77)*
Lnta	0.0051	0.0225***
	(1.50)	*(4.34)*
Growth	0.0399***	0.0113*
	(3.62)	*(1.82)*
Curas	0.2247***	0.1059***
	(9.02)	*(3.64)*
Tangas	0.0561**	0.0789***
	(2.46)	*(3.48)*
Quoted	-0.0407***	-0.0783***
	(-3.89)	*(-4.39)*
Firm effect	No	Yes
F-stat ind.	7.43***	1.75***
F-stat year	0.41	1.41
Pseudo R^2	0.293	0.876

Maximum likelihood regressions with leverage as dependent variable. T-tatistics in parentheses; Variables are as defined in Section II. B; * denotes significance at the 10% level; ** denotes significance at the 5% level; *** denotes significance at the 1% level

TABLE 7

Determinants of leverage on separate samples of quoted and non quoted firms

	Non-quoted sample		Quoted sample	
	No fixed firm effects	Fixed firm effects	No fixed firm effects	Fixed firm effects
Intercept	0.6696***	0.5152**	0.0921	0.1219
	(7.33)	*(2.77)*	*(0.54)*	*(0.55)*
ROA	-0.5481***	-0.5546***	-0.5547***	-0.2486**
	(-6.96)	*(-9.29)*	*(-3.82)*	*(-1.99)*
Risk	-0.0758***	-0.0299	-0.0433	-0.0579
	(-3.64)	*(-1.35)*	*(-0.43)*	*(-0.66)*
Lnta	-0.0028	0.0183***	0.0281***	0.0297***
	(-0.62)	*(2.99)*	*(4.62)*	*(2.99)*
Growth	0.0512***	0.0136*	0.0231	0.0083
	(3.70)	*(1.87)*	*(1.25)*	*(0.71)*
Curas	0.2153***	0.1052***	0.2290***	0.0451
	(6.96)	*(3.26)*	*(3.83)*	*(0.61)*
Tangas	0.0797***	0.0898***	-0.0380	0.0305
	(3.07)	*(3.75)*	*(-0.68)*	*(0.47)*
Firm effect	No	Yes	No	Yes
F-stat ind.	5.16***	1.57**	6.38***	1.38*
F-stat year	0.34	2.54***	0.88	1.13
Pseudo R^2	0.279	0.893	0.429	0.813

Maximum likelihood regressions with leverage as dependent variable. T-tatistics in parentheses; Variables are as defined in Section II. B; * denotes significance at the 10% level; ** denotes significance at the 5% level; *** denotes significance at the 1% level

TABLE 8

Determinants of short term debt on full sample and separate samples of quoted and non quoted firms

	Panel A		Panel B			
	Full Sample		Non-Quoted Sample		Quoted Sample	
	No fixed firm effects	Fixed firm effects	No fixed firm effects	Fixed firm effects	No fixed firm effects	Fixed firm effects
Intercept	0.2135***	0.3380**	0.3740***	0.4766***	0.0622	-0.0793
	(3.04)	*(2.11)*	*(4.62)*	*(2.80)*	*(0.44)*	*(-0.41)*
ROA	-0.4496***	-0.3755***	-0.4866***	-0.4577***	-0.3788***	-0.0856
	(-7.76)	*(-7.82)*	*(-6.96)*	*(-8.42)*	*(-3.13)*	*(-0.80)*
Risk	-0.0360**	-0.0187	-0.0165	-0.0128	-0.1657**	0.0042
	(-2.05)	*(-0.96)*	*(-0.90)*	*(-0.63)*	*(-1.98)*	*(0.06)*
Lnta	-0.0016	0.0031	-0.0164***	-0.0079	0.0192***	0.0301***
	(-0.53)	*(0.67)*	*(-4.04)*	*(-1.39)*	*(3.80)*	*(3.32)*
Growth	0.0282***	0.0044	0.0473***	0.0087	0.0051	-0.0019
	(2.78)	*(0.80)*	*(3.84)*	*(1.30)*	*(0.33)*	*(-0.19)*
Curas	0.4631***	0.2548***	0.4615***	0.2375***	0.3003***	0.2675***
	(20.92)	*(9.78)*	*(16.85)*	*(8.07)*	*(6.11)*	*(4.17)*
Tangas	0.0335*	0.0100	0.0434*	0.0219	-0.0775*	-0.0494
	(1.65)	*(0.49)*	*(1.89)*	*(1.00)*	*(-1.66)*	*(-0.90)*
Quoted	-0.0225**	-0.0628***	-	-	-	-
	(-2.43)	*(-3.93)*				
Firm effect	No	Yes	No	Yes	No	Yes
F-stat ind.	7.32***	2.13***	5.87***	2.00***	5.64***	1.26
F-stat year	0.39	2.23**	0.76	1.70*	0.56	1.13
Pseudo R^2	0.192	0.471	0.181	0.466	0.206	0.427

Maximum likelihood regressions with short term debt as dependent variable. T-tatistics in parentheses; Variables are as defined in Section II. B; * denotes significance at the 10% level; ** denotes significance at the 5% level; *** denotes significance at the 1% level